

the substrate with ultraviolet light in an ammonia gas atmosphere, or by binding a carboxyl radical to the substrate by dipping the substrate into a solution containing a carboxyl radical or an epoxy radical.

Please amend claim 2 as follows:

2. (Twice Amended) A substrate as claimed in claim 1, wherein said substrate is natural diamond, synthetic diamond, or diamond-like carbon.

Please amend claim 6 as follows:

6. (Twice Amended) The substrate as claimed in claim 1, wherein said polar radical is a carboxyl radical and said carboxyl radical is connected on a surface of said substrate through ester linkage.

Please amend claim 7 as follows:

7. (Twice Amended) The substrate as claimed in claim 1, wherein said polar radical is a carboxyl radical and said carboxyl radical is connected on a surface of said substrate through amide linkage.

Please amend claim 8 as follows:

8. (Twice Amended) The substrate as claimed in claim 1, wherein said polar radical is a carboxyl radical and said carboxyl radical is introduced to a surface of said

substrate with a silane coupling agent, a titanium coupling agent or an aluminum coupling agent.

Please amend claim 9 as follows:

9. (Twice Amended) The substrate as claimed in claim 1, wherein said polar radical is an epoxy radical and said epoxy radical is introduced to a surface of said substrate with a silane coupling agent, a titanium coupling agent or an aluminum coupling agent.

Please amend claim 10 as follows:

10. (Twice Amended) The substrate as claimed in claim 1, wherein said polar radical is an amino radical and said amino radical is introduced to a surface of said substrate with a silane coupling agent, a titanium coupling agent or an aluminum coupling agent.

Please amend claim 13 as follows:

13. (Third Amendment) A solid state substrate having DNA immobilized thereon, wherein said substrate is diamond or diamond like carbon and is chemically modified by binding a chloride by irradiating the substrate with ultraviolet light in a chlorine gas atmosphere, and then replacing the chloride with a hydroxyl radical by dipping the substrate into a boiling alkali solution or steam, or an amino radical by irradiating the substrate with ultraviolet light in an atmosphere ammonia gas, or a carboxyl radical by dipping

the substrate into a solution containing a carboxyl radical or an epoxy radical.

Please amend claim 16 as follows:

16. (Twice Amended) A chip for amplifying and immobilizing DNA wherein the surface of the chip is modified by binding a chloride by irradiating the chip with ultraviolet light in an atmosphere of chlorine gas, and replacing the chloride by a hydroxyl radical by dipping the chip into a boiling alkali solution or steam, or an amino-radical by irradiating the chip with ultraviolet light in an atmosphere of ammonia gas, or a carboxyl radical by dipping the chip into a solution containing a carboxyl radical or an epoxy radical.

Please enter the following new claims:

39. (New) The solid state substrate according to claim 1 wherein the surface of the substrate is roughened.

40. (New) The solid state substrate according to claim 13 wherein the surface of the substrate is roughened.

41. (New) The chip according to claim 16 wherein the surface of the chip is roughened.